



THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

TOWN OF BLIND RIVER

DISTRICT OF ALGOMA

MCE
BLI
WAT
APGU

1969

100
100

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca

R E P O R T

on

WATER POLLUTION SURVEY

of the

TOWN OF BLIND RIVER

District of Algoma

May - 1969

Ontario Water Resources Commission

District Engineers Branch

Division of Sanitary Engineering

(i)

ACKNOWLEDGEMENT

The field work associated with the preparation of this report was greatly expediated due to the assistance received from Mr. Normand Guigere, Algoma and District Health Unit, and Mr. Leonard Lavallee, Town Foreman, Town of Blind River.

The laboratory work carried out in conjunction with the field survey was performed by the Public Health Laboratories in Sault Ste. Marie and by the Ontario Water Resources Commission Laboratories in Toronto.

TABLE OF CONTENTS

Acknowledgement	(i)
Table of Contents	(ii)
1. Introduction	1
2. General	1
3. Water Supplies	2
3.1 Municipal	2
3.2 Private	3
4. Water Uses	3
4.1 Municipal	4
4.2 Recreational	4
4.3 Agricultural	4
5. Water Pollution	5
5.1 Municipal Waste Disposal	5
5.2 Industrial Waste Disposal	6
6. Field Survey	6
7. Results of the Analyses	7
8. Discussion of the Results	7
8.1 Chemical	8
8.2 Bacteriological	8
9. Proposed Sewage Works	9
10. Summary	9
11. Recommendations	10
Table I	- Sample Analyses
Appendix A	- Definition of Terms
Appendix B	- Information on Financing
Appendix C	- Map of Area showing Town and Sampling Stations

R E P O R T

ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

A water pollution survey was carried out in the Town of Blind River by the District Engineers Branch of the Division of Sanitary Engineering. The water sampling portion of the survey was performed at various times on May 29 and 30, 1969. Interviews with local officials were also held.

Surveys of this nature are performed by the District Engineers Branch of the Commission as an aid for determining water supply and sewage treatment requirement.

II GENERAL

The Town of Blind River has been dependent upon the lumber industry since its beginning during the nineteenth century. It is located on the King's Highway Number 17 at its intersection with the Blind River, lying approximately 80 miles east of the City of Sault Ste. Marie. Blind River is serviced by a deep sea harbour, the Canadian Pacific Railway and the Trans Canada Highway.

Map Number 1 is a plan view of the town. The entire area is serviced by a municipal water works and the majority of the homes discharge their domestic wastes to a municipally owned and operated sewage collector system. No sewage treatment facilities are present in the system and raw sewage is being

discharged directly to the Blind River. Separate storm sewers serve the commercial areas and discharge to the river at both banks.

The domestic water is presently obtained from three drilled wells, two of which are municipally owned, the third being OWRC owned. In the very near future a fourth well will be placed into the system to augment periods of maximum water usage. International Water Supply Limited is presently test pumping this well at 250 Igpm.

The sewage system discharges untreated sewage to the Blind River near its mouth. The east side of the town is serviced by one outfall and the west side by three.

The town is rural in nature with a population of 3,394^I and a taxable assessment of 4.128^I million dollars. The economy of the area, although highly dependent on the lumber industry, is based also on agricultural land use north of the town. The main industry, McFadden Lumber Company, will reportedly be suspending its operation in November of this year.

III WATER SUPPLIES

3.1 Municipal Water Supply

The present town water supply was initiated in 1928. At that time two wells and a 500,000 I.G. water tower were constructed along with the majority of the distribution system.

^I According to the 1969 Municipal Directory
Ontario Department of Municipal Affairs, Toronto, Ontario.

The wells were drilled along the river and supplied approximately 325 IGM to a system of 4 to 12 inch cast iron mains with valves and hydrants.

In 1957 it was found necessary to augment the supply by pumping water directly from the Blind River. Since this resulted in a taste and odour as well as bacteriological problems, the OWRC constructed well Number 3 in 1960. At that time chlorination facilities were also installed in pumphouse No.1 where all three supplies were consequently treated and metered before being distributed. Fluoridation facilities are provided but not being used.

During the past few years it was again found necessary to increase the supply and construction of well Number 4 has been completed under an OWRC agreement.

3.2 Private Water Supplies

There are reportedly no private water supplies in the Town of Blind River.

IV WATER USES

The water uses in Blind River are mainly domestic. During the past, a severe shortage of supply has been experienced during the summer periods and this has necessitated the passing and enforcing of a water usage by-law. With the construction of the new well (No.4) by the OWRC, the maximum

demand will hopefully be met.

4.1. Municipal

There are approximately 900 domestic, 80 commercial and two industrial services on the municipal supply system using a combined volume of 153.552^I million gallons annually.

4.2 Recreational

The two water bodies, the Blind River and the North Channel are extensively used by the residents of Blind River and the tourists visiting the area. The main recreational use of the river is fishing and boating while that of the North Channel is primarily swimming although a commercial fishing firm is located in the town. The mouth of the river is polluted due to the discharge of untreated sanitary sewage at that point.

4.3 Agricultural

The agricultural use of water associated with the area is primarily north of the town limits and consequently is not expanded in this report. No noticeable water quality problem appeared to be associated with this operation immediately north of the town and water samples collected in the area indicate that the Commission's objectives, for natural watercourses, were being obtained.

^IPumpage for 1968

V WATER POLLUTION

The major source of water pollution is due to the domestic waste discharging to the river at its mouth although several ditches gaining access to the river and the North Channel are also carrying polluted materials.

5.1 Municipal Waste Disposal

There are no sewage treatment facilities presently serving the town although the majority of the area was sewered as early as 1930. Presently, there exist several small areas at the north, east, and west sides of the municipality which are not sewered due to adverse topography. The municipality is divided roughly into two by the river and each section has its own sewage system discharging at points almost opposite one another on the river. The cast iron mains composing the system range from 6 to 10 inches in diameter and pumping stations are placed where required. The storm sewers range from 10-inch diameter pipes to open ditches. Additions to the system have been made as necessitated by expansion of the town since 1889. Three discharge pipes reach the river on the west banks and only one pipe discharges on the east.

Several of the storm sewers were located and sampled during the survey as were numerous portions of the river both up and down current of the town.

5.2 Industrial Waste Disposal

The McFadden Lumber Company does not utilize a large quantity of water and consequently has little waste effluent resulting from its mill operations. The lumber mill will be ending its operations in the town by the end of the year.

VI FIELD SURVEY

The field work associated with this survey was carried out during the course of two days. Samples were taken from approximately 2 miles north of the down-town area to the mouth of the river. In addition all streams, open ditches and storm sewers reaching the North Channel were examined visually as well as analytically. Samples for both chemical and bacteriological analyses were obtained at all sampling locations.

Since the river cuts the town into two almost equal areas, both sides of the river receive approximately the same number of storm sewer discharges. Six sewer outfalls were located on the east side and five on the west. In addition to these, there were five open ditches discharging to both the river and the lake as well as one combined sewer discharging to the latter. See map Number 1 for details.

It was reported that sampling stations 15 and 16 are the only sanitary sewer discharge points in the town; the remaining are storm sewers and drainage ditches.

VII RESULTS OF THE ANALYSES

The analytical results of all bacteriological and chemical samples obtained during the course of the survey are listed in Table I. The bacteriological examinations were performed at the Public Health laboratories in Sault Ste. Marie and the chemical analyses by OWRC's Division of Laboratories in Toronto. Reference should be made to Appendix A for an explanation and the significance of the various parameters examined. The code letters used in numbering the samples have been chosen for convenience in identifying the sample as to river (R), ditch (D), lake (L), or storm sewer (S) and location as in west side (W) or east side (E) of the river.

A total of 21 samples were taken and of these 13 were from the river, three from sewer effluents, three from open ditches, and two from the North Channel (Lake Huron).

VIII DISCUSSION OF THE RESULTS

The data presented in Table I, indicates that the town is polluting the Blind River at five of the discharge stations sampled during the survey. The greatest source of this pollution is contributed by the two sanitary sewer discharge points as would be expected. Additional contributing

factors are the open ditch between West Street and Sir-Von Drive, that at the west end of Longview Avenue, and the Centre Avenue storm sewer.

8.1 Chemical

The analyses of the river samples indicated that the BOD concentration at one location exceeded the Commission's objective of 4 ppm for natural watercourses. That sample was of the river at the west sanitary sewer outfall. A sample of the actual effluent could not be obtained there since all three of the pipes were submerged.

Both of the samples obtained from the North Channel (Lake Huron) were within the objectives while all of the three sewer outfalls and the open ditches exceeded them. Seventy-six per cent of all samples indicated the presence of phenols and 79 per cent of all samples tested showed the presence of ABS. The latter is a definite indication of the presence of domestic wastes.

8.2 Bacteriological

A total of 21 river, lake, sewer outfall, and open ditch samples were obtained for bacteriological analyses. All of these contained coliform bacteria and all but three showed the presence of fecal coliforms. The Commission's objectives for total coliform bacteria is 2,400 per 100 ml.

On this basis, 48 per cent of the samples exceeded the objectives. High fecal coliform counts similar to those obtained from the Centre Avenue storm sewer, the Longview Avenue ditch, and the mouth of the river indicate that fecal matter, most likely in the form of domestic waste, is gaining access to these systems. This situation was further verified by the presence of the ABS in the samples.

IX PROPOSED SEWAGE WORKS

Two engineering reports have been prepared for the town in the past by Mr. D. McDonald, P.Eng. Both of these proposed the installation of a sewage works. The first, in 1960, recommended the construction of a facultative lagoon while that of 1963 outlined a sewage treatment plant due to the shortage of suitable land for a lagoon. Both were rejected by Council.

X SUMMARY

On May 29, and 30, 1969, a water pollution survey was conducted in the Town of Blind River and the results indicated that the town is polluting the river at several locations but particularly near its mouth. The part of the Blind River located west of the river appears to have a greater problem associated with it.

The only way pollution can be curtailed in the town is by the installation of a sewage treatment facility, the

examining of existing domestic connections in the problem areas as outlined in this survey, and the extension of the sewage collector system into the unsewered sections - especially the West Street, Longview Avenue, and Martin Street areas.

XI RECOMMENDATIONS

It is recommended that the municipality construct a sewage treatment facility, examine problem areas for malfunctioning domestic connections, and extend the sewage system into all unsewered areas.

TABLE I

TOWN OF BLIND RIVER

Sample Analyses

TOWN OF BLIND RIVER

Sample Analyses

TABLE I

Sampling Station	Location	Sample Date	CHEMICAL						BACTERIOLOGICAL	
			5-Day BOD (ppm)	Solids		ABS (ppm)	Phenol (ppb)		Tot. Colif. per 100 ml	Fecal Colif per 100 ml
				Total (ppm)	Susp. (ppm)					
1-RE	2 mi. upriver	May 29/69	1.2	40	10	30	0	6	2,000	20
2-RE	1 mi. upriver	"	1.0	40	5	35	0	0	100	10
3-RE	Trailer Camp point	"	1.4	50	5	45	0.1	6	300	50
4-RE	East Slip	"	1.0	60	5	55	0.1	4	1,000	40
5-RE	South of East Slip	"	0.8	50	5	45	0.1	8	160	10
6-SE	High School	"	3.0	400	130	270	*	6	6,000	300
7-RE	Lawton St.	"	0.8	30	5	25	*	10	160	6
8-RE	Woodward Ave.	"	0.8	30	5	25	*	0	80	8
9-R	North Bridge	"	0.8	30	5	25	*	0	80	0
10-RE	Murray St.	"	0.8	30	5	25	0	3	150	0
11-R	Hwy. 17 Bridge	"	0.8	30	5	25	*	0	140	0
12-D	West St. Ditch	"	4.5	440	20	420	*	6	3,000	80
13-D	Longview Ave. Ditch	"	5.5	320	20	300	0.4	6	70,000	8,000
14-R	West Slip	"	1.0	60	15	45	0.1	4	400	110
15-E	East Domestic Sewage Outfall	"	50	320	60	260	7.0	20	>1,000,000	>10,000
16-RW	West Domestic Sewage Outfall	May 30/69	17	140	40	100	0.7	12	1,400,000	60,000
17-R	Mouth of River	"	0.8	40	5	35	0.1	4	60,000	9,000
18-S	Centre Ave.	"	3.5	420	65	355	0.1	6	160,000	3,000
19-L	Lake-West of Town	"	0.6	60	5	55	*	4	30,000	3,000
20-D	Martin St.	"	4	180	35	145	0.2	6	11,000	10
21-L	Indian Point	"	0.8	70	5	65	0.1	0	13,000	300

*Insufficient Sample

APPENDIX A

TOWN OF BLIND RIVER

Definition of Terms

APPENDIX A

Definition of Terms

BOD (Biochemical Oxygen Demand)

The Biochemical Oxygen Demand (BOD) is a measure of the amount of oxygen required for the natural stabilization of decomposable organic matter present in sewage. OWRC objectives allow concentrations in natural waters and waste discharges of no greater than 4.0 and 15.0 parts per million (ppm) respectively.

ABS (Alkylbenzene Sulphonate)

The Alkylbenzene Sulphonate (ABS) is a surfactant extensively used in detergents and so is present in domestic sewage at levels averaging approximately 10 ppm. Rivers usually contain trace quantities of about 0.1 ppm while ground water supplies range from zero to several parts per million depending upon the pollution of the aquifer by domestic wastes.

Solids

The solids content of a liquid is expressed as total, suspended and dissolved solids. The latter is determined by subtracting the first two solids and all three are expressed in ppm. The suspended solids figure is the most important since it represents that portion which is carried down current and later deposited. The OWRC's objective for the

discharge of this material is a concentration less than 15 ppm.

Phenols

The presence of phenol or phenolic equivalents is generally associated with discharges containing petroleum products or wastes from some industries. It is generally conceded that adequate protection of surface waters will be provided if the concentration of phenols in wastes is less than 20 parts per billion (ppb). Phenolic type wastes cause a great concern in chlorinated water supplies since the combination of chlorine with phenol forms a chloro-phenolic compound which results in objectionable taste and odour problems. Phenols have also been known to taint the flesh of fish.

Coliforms

Coliform bacteria are commonly found in the intestinal tract of man and other animals and are therefore used as an indicator of pollution. In polluted water their concentration is roughly proportional to the degree of sewage contamination present. The acceptable limit for natural watercourses is a concentration of less than 2,400 organisms per 100 millilitres of water.

Fecal Coliforms

The fecal coliforms are coliform bacteria usually associated only with the fecal discharges of man and other

warm blooded animals and as such their presence indicates pollution from intestinal origin. When this coliform is present, it is assumed that the water is potentially dangerous when consumed.

APPENDIX B

TOWN OF BLIND RIVER

Methods of Financing

APPENDIX B

Implementation of Sewage Works Programs

Currently, there are three general methods which may be utilized for implementing sewage works programs. These are: 1) to enter into an agreement with the OWRC for the construction of the treatment and collector works with an obligation to pay the debt retirement and operating charges over the term of the agreement with the facility reverting to the municipality at the end of the term of the agreement, 2) by requesting the provision of service from a Provincially-owned project, and 3) by proceeding with the construction independently and meeting capital costs by the sale of debentures.

OWRC/Municipal Projects

For the construction of water and sewage works under agreement with this Commission, the works are provided and developed under Sections 39 to 46 of the Ontario Water Resources Commission Act.

For this type of arrangement, the Commission utilizes a sinking fund and consequently the annual payments are based on a specific debt retirement period and the payments are unchanged for the period of the agreement. This type of project may be financed over a period of time up to a maximum of thirty years. The annual charges for projects constructed under this agreement are determined as follows:

1. Capital Repayment

As noted, OWRC financing is by the sinking fund method and an annual payment of approximately 2 per cent of the capital cost is required to retire a debt over a thirty-year period.

2. Interest

On new Commission projects, interest is calculated at the current rate.

3. Reserve Fund

To provide money for repairs and replacements, Section 40 of the Ontario Water Resources Commission Act provides for the establishment of a reserve fund by the Commission. It is important to note that this fund is established in the name of the municipality and the balance consequently earns interest. It has now been established by Commission minute that the reserve fund billing for each project shall continue only until the fund reaches an amount of ten times the initial annual billing and the reserve fund billing shall be re-imposed only when the fund has been depleted to 80 per cent or less of the maximum amount.

4. Operating Costs

Under OWRC agreement, the municipality is responsible

only for the operating costs directly attributed to the project in the municipality. Therefore, no charges are made by the Commission for the services of head office personnel who are available as required to advise on the satisfactory operation and maintenance of the project.

Provincially-Owned Works

In June, 1967, the Honourable J.R. Simonett, Minister of Energy and Resources Management, made an announcement which expanded the authorization of this Commission for the provision of water supply and sewage treatment facilities. This new program allows the Commission to construct entire water and sewage works facilities for small municipalities. The capital costs of these can be amortized over a 40-year period.

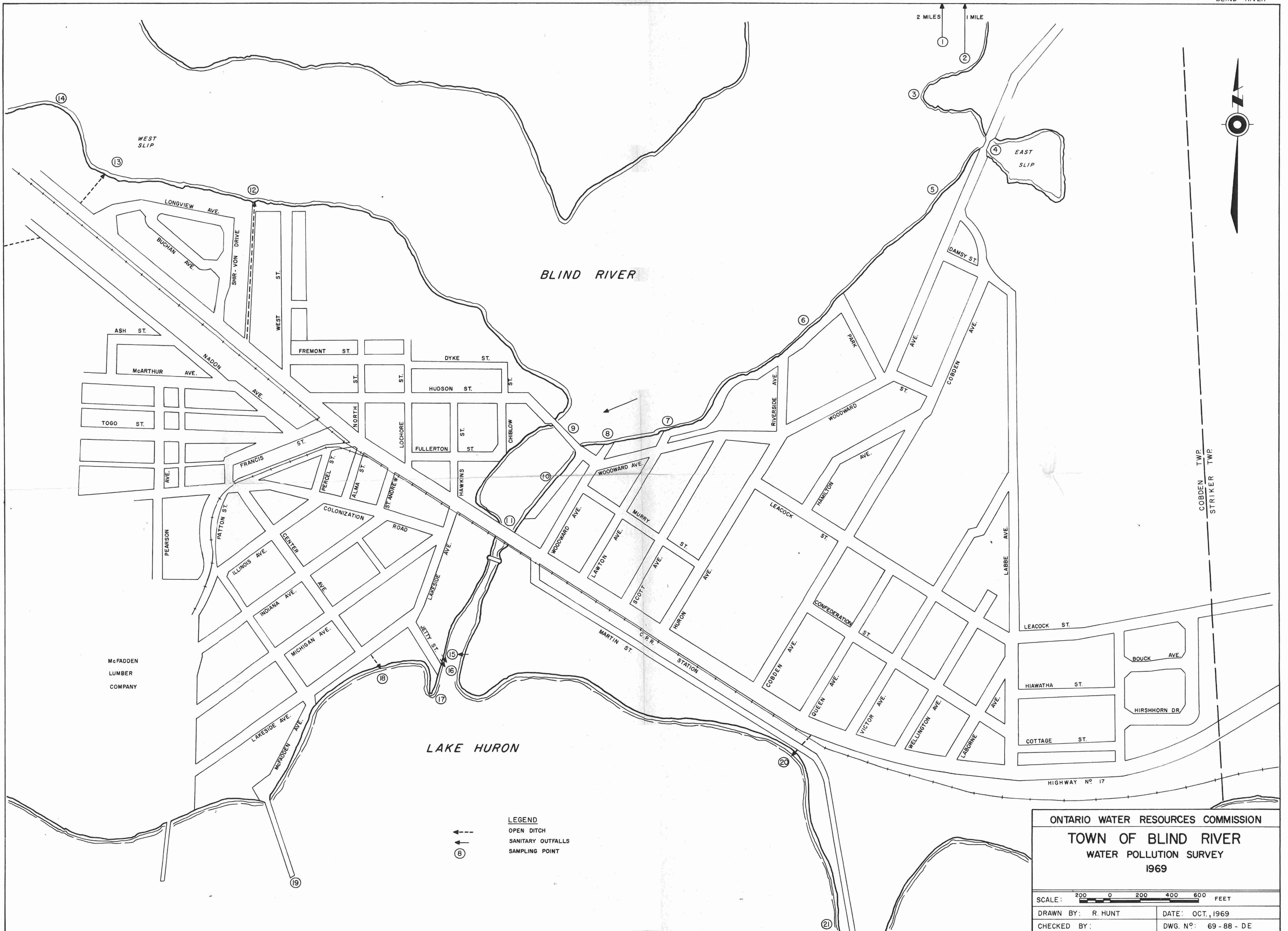
A slight variation of this program could be implemented in that the municipality may request that this Commission provide only the major water and sewage works facilities as Provincially-owned works and develop the water distribution and sewage collector systems under the standard type of Commission project. It would appear that where applicable, it would be more advantageous for the municipality to proceed on the basis of requesting this Commission to develop entire systems as Provincially-owned works.

The associated cost of supplying these works, including amortization of capital costs, together with operating and maintenance charges, will be recovered by the sale of service to the affected municipalities by rates determined on a usage basis. These facilities will be wholly-owned by the Province of Ontario and the arrangements for service will be formalized by contracts between the Commission and the municipality concerned. The installations will be operated entirely at cost with appropriate provision for adjustment in rate.

Development

If a municipality, after considering the alternatives, wishes this Commission to consider Provincially-financed projects, application forms should be completed and submitted together with a resolution of the Municipal Council. A draft of the suggested wording of the resolution is included with the application forms.

If the proposed works are to be built by the municipality on its own initiative or as a formal project under agreement with this Commission, it is required that the Council retain a consulting engineer to prepare preliminary engineering reports on the proposed work. If a Provincial system is contemplated, no action should be taken with respect to retaining a consulting engineering firm as the



Commission will designate a consulting engineer to carry out the Provincial portion of the work and it would be advantageous if the municipal portion be studied and reported on by the same engineer.



(16049)

MOE/BLI/WAT/APGU

DATE DUE		

MOE/BLI/WAT/APGU 4 x 1000 71
Ontario Water Resources Co
Water pollution
— survey of the Town of apgu —
— Blind River, District of C.1 a aa —
Algoma

NLR 176